Among spinoffs for commercial, home and consumer use is a novel video-computer system for creating unusual graphic designs

Moon Technology for a New Art Form

Howard Sochurek, a New York free lance artist, is using an "electronic palette" to create extraordinary visual effects. His work is gaining wide acceptance in commercial art circles and, Sochurek acknowledges, he is indebted to NASA research, which provided both the inspiration and the basic technology for his exciting new art form.

Sochurek uses video-computer equipment to convert ordinary photographs into spectacular graphic designs or "electronic paintings." His technique is based on an image enhancement process originally developed for NASA's Johnson Space Center as an interpretive aid in analysis of moon photos.

In the early days of the Apollo program, NASA employed telescopic photography for preliminary consideration of possible Apollo lunar landing sites. The photos acquired provided good general views of lunar features, but without known reference points it was difficult to determine certain essential details, for example, the height of a large boulder or the depth of a moon crater. To get such information, NASA and its contractors developed a technique known as "density slicing," which refers to the density scale of a photograph or the tones from pure white to pure black with gradations of gray in between.

The keystone of the density slicing process is an instrument called a densitometer, which can "see" many subtle gradations not visible to the human eye. This instrument was integrated into a computerized system which analyzed the tonal density of a moon photo, assigned a color code to each of the various shades, and created on a video monitor a new picture in which each color represented a particular measurement, such as height or depth. Density slicing, applied to telescopic photos and later to close-up views acquired by unmanned spacecraft, provided the foundation for NASA's extensive study and selection of safe Apollo landing sites.

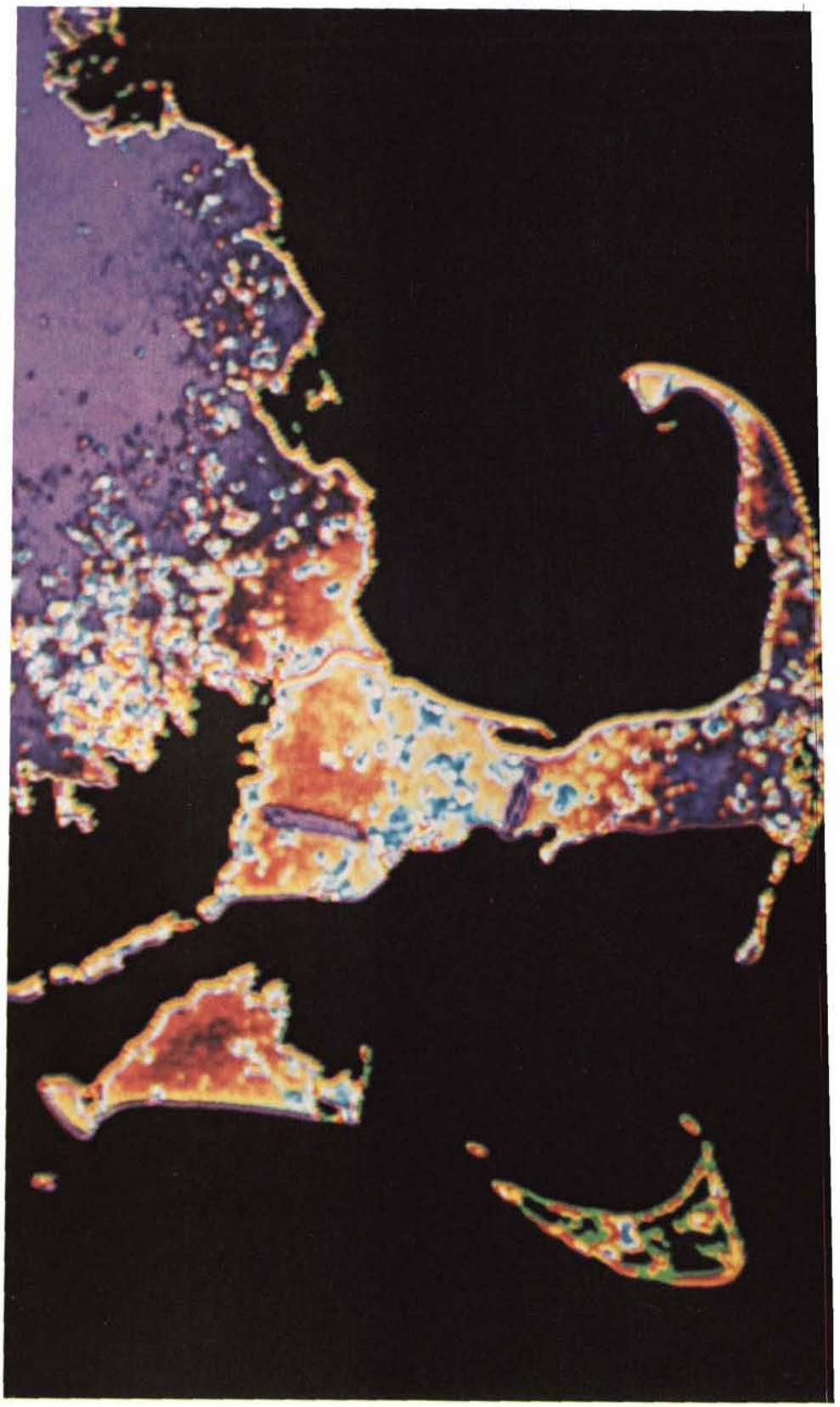
Howard Sochurek, a former award-winning *Life* photographer who had covered many aerospace assignments, heard of the NASA technique at a convention of the Aviation/Space Writers Association. He followed up with a visit to Johnson Space Center, where he witnessed a demonstration of the NASA system. The possibilities for a new art form excited him, but he wanted a variation of the basic technology. NASA's original system assigned a particular color to a particular density; for artistic breadth, Sochurek wanted a system which could put *any* color into *any* density. He discussed the matter with Spatial Data Systems, Inc., a Goletta, California firm which was adapting density slicing technology to commercial use in such areas as medical x-ray analysis. Sochurek bought the necessary video-computer equipment from the company, which customized it to his specifications.

At work, Sochurek sits before a video monitor and a computer keyboard. The image to be converted—a photo, a slide, a pen and ink sketch, a painting or even a three-dimensional object—is placed under a high resolution TV camera. The camera scans the image and an analyzer separates it

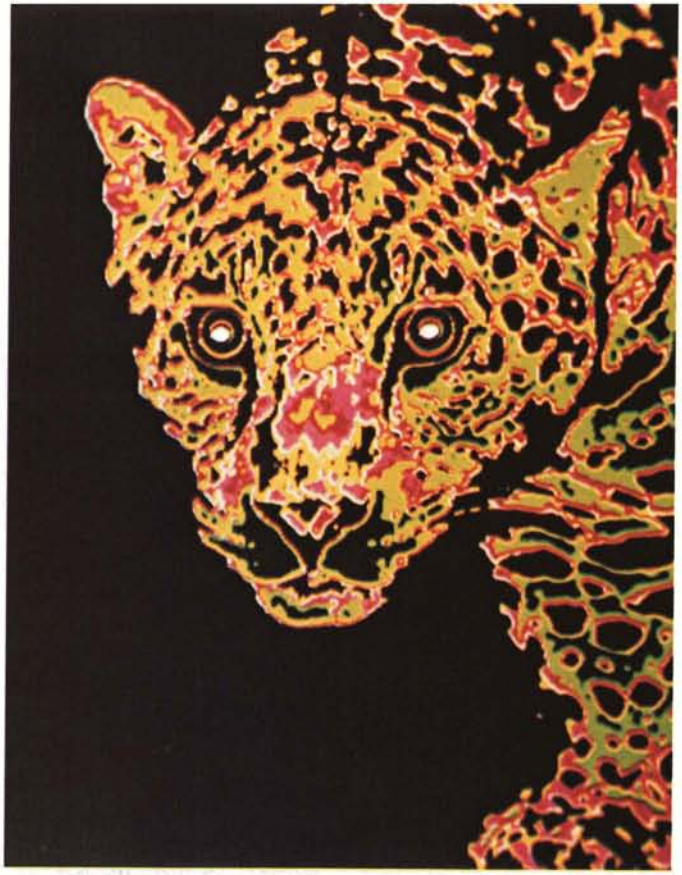
according to the various densities; the separated image then appears on the video monitor.

Now Sochurek begins to "paint" by means of his electronic palette, which offers literally millions of color combinations. By punching keys, he assigns a color to each density value of the image. He has a wide choice, ranging from brilliant primary colors to subtle pastels, with a variety of hues and tints within each basic color. Studying the resulting color image on the monitor, he can then change all or any part of it by punching in new color combinations. The process is repeated until Sochurek feels that he has achieved the desired effect. Then, with a simple push of the "print it" button, the system transfers the finished art work to film.

The appeal of Sochurek's electronic painting is attested by a large and growing list of clients, including industrial firms, advertising agencies, publishing companies and other art users. His work has appeared on the covers of national magazines, on book jackets and posters, in brochures and reports. Other applications range from unusual animal graphics for a hospital children's ward to office murals which present eye-catching views of a company's product line developed from unexciting photos of cast iron industrial equipment. Electronic art technology is still advancing, Sochurek says, and he sees many new applications in the future for the space-inspired process.



The illustration at right is an artistic impression of a satellite image covering an area of the northeastern United States around Cape Cod, Massachusetts. It is an "electronic painting" by New York artist Howard Sochurek, who uses a process based on NASA image-enhancement technology developed for interpretation of lunar photos.



The art works pictured were created by photo-artist Howard Sochurek, whose "palette" is an electronic system derived from NASA technology. Sochurek's technique involves use of video-computer equipment to convert basic images, such as photographs, into unusual graphic designs. The electronic equipment allows extraordinary choice of color and composition, but the final effect is the product of the artist's creative ability.